CLAIMS

1. A method of calibration of magnification of a microscope with the use of a diffraction grating, comprising the steps of determining a mean period of a diffraction grating by irradiating the diffraction grating with an electromagnetic radiation having a known wavelength and analyzing a resulting diffraction pattern; determining a scatter of individual values of a period of the diffraction grating by multiple measurements of periods of the diffraction grating by a microscope in pixels in one area in a microscope field of view; calculating a mean value of the period and the scatter based on the measurements; determining a sufficient number of measurements of the period for providing an accepted statistic error of a magnification of the microscope; performing measurements corresponding to the determined acceptable number of measurements, of individual values of the period in pixels in a plurality of portions of the diffraction grating; calculating a general mean value of the period in pixels based on an immediately preceding step; and finally calculating a parameter corresponding to the magnification of the microscope based on the determined mean value of the period of the diffraction grating.

2. A method as defined in claim 1, wherein said calculation of the parameter includes calculation of a value of the magnification of the microscope.

3. A method as defined in claim 1, wherein said calculation of the parameter includes calculation of a pixel length of the microscope.

4. A method as defined in claim 1, wherein said determining of a mean period of the diffraction grating is performed in accordance with the formula:

$$T_0 = \frac{m\lambda}{\sin\theta_m}$$

wherein m is an order of diffraction, λ a wavelength of a used monochromatic radiation which is known with high accuracy, θ_m is an angle of diffraction for radiation measured which is diffracted in the m order.

5. A method as defined in claim 1, wherein said determining of the mean value of the period T_{AVE} and determining of the scatter ω is performed in accordance with the formulas:

$$T_{AVE} = \frac{\sum_{i=1}^{N} T_i}{N}$$

$$\omega = \sqrt{\frac{\sum_{i=1}^{N} (T_i - T_{AVE})}{N}},$$

wherein i is the number of measurement, N is a number of performed preliminary measurements, T_i is an individual period value. T_{AVE}, T_i and ω are measured in pixels.

6. A method as defined in claim 1, wherein said determining of a permissible number of measurements is performed in accordance with the formula:

$$K \geq \left(\frac{\omega}{\sigma T_{AVE}} \right)^2$$

where σ is the acceptable calibration error.

7. A method as defined in claim 1, wherein said calculation of the general mean value of the period is performed in accordance with the formula:

$$T_{GEN} = \frac{\sum_{i=1}^{K} T_i}{K}$$

8. A method as defined in claim 2, wherein said determination of the magnification is performed in accordance with the formula:

$$MAG = \frac{L * T_{GEN}}{Q * T_0}$$

wherein L is a width of a screen on which a magnified image is observed, and Q is a number of pixels in a line.

9. A method as defined in claim 3, wherein the determination of the pixel length is performed in accordance with the formula:

$$PL = \frac{T_0}{T_{GEN}}$$